Oregon Department of Education

Growth Model Summary

The Oregon Department of Education has a long history in the development and implementation of innovative assessment methods to inform instruction and measure learning outcomes. ODE first developed and implemented criterion referenced testing for Oregon schools in 1975. Performance assessment of student writing began in 1978. Using NAEP assessment strategies as a model, sampling of student performance using criterion referenced testing continued throughout the 1980s; and the first statewide assessment of all students was conducted in 1991. The state assessment system was among the first to be approved by the United States Education Department under the ***Improving America's Schools Act***. Following passage of HB2991 by the Oregon Legislature in 1995, the department revised the academic content standards and aligned the state assessments along a vertical Rasch Unit (RIT) scale and established performance indicators for grades 3, 5, 8 and 10. In 1997, Oregon moved to the forefront of educational web-based data collection, database and reporting when it implemented the Database Initiative (DBI). Following passage of the ***No Child Left Behind Act***, the department developed and implemented new assessments for grades 4, 7 and 8.

In 1999, the department also developed and implemented School and District Performance Reports at the state, district and individual school level that established a public reporting expectation and an accountability system based upon student achievement of the state's academic content standards. As a result of this history, the use of a common vertical scale across elementary, middle and high school levels using criterion referenced testing tied directly to statewide academic content standards represents a method of operation that is fully integrated into Oregon classrooms and teacher preparation programs. When State Superintendent Susan Castillo took office in 2002, she identified closing the achievement gap and accountability for results as her highest priorities for the agency.

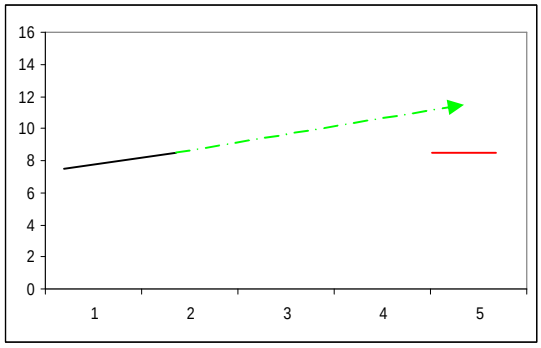
Beginning in 2001, the Department has made fully operational a unique student identifier system. Every student in the system is assigned a number that allows us to monitor student progress grades 3 through 8 and high school in any school in the state. This new technology creates the opportunity to add growth of individual students toward the state's academic content standards to the array of measures already in use in the state. The existing individual School and District Performance Report uses an index system that utilizes 4 years of data at the aggregated school level as one measure of quality in the accountability system. While helpful, this does not give us the richness of disaggregated data based upon each individual student that the use of the unique student identifier in conjunction with the growth model will afford. Therefore, this proposal will build upon the established framework and adds a vitally important dimension to Oregon's accountability system.

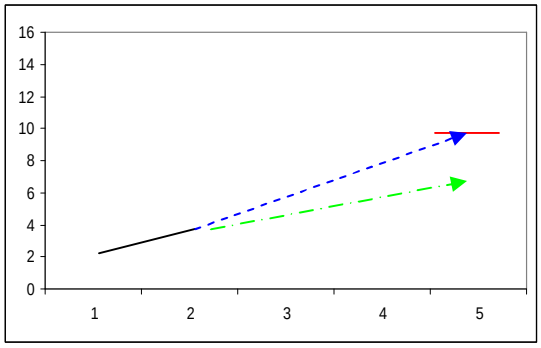
The Oregon Department of Education has rigorously implemented the provisions of the No Child Left Behind Act and complies with the guidelines of Secretary Spellings in the April, 2005, letter outlining the *New Path for No Child Left Behind*.

The Growth Model in Relation to Current Status and Safe Harbor Models

The proposed growth model will be used in conjunction with the existing, status-based AYP model now used in Oregon. The purpose of the new growth model will be to provide more direct information on student and school progress by tracking individual student's learning over time and to ensure that schools are not incorrectly identified as needing improvement when there is substantial growth in achievement occurring in the school. For the purpose of identifying schools in need of improvement, the new growth model will supplement status-based AYP and existing safe harbor provisions to hold "safe" schools that are demonstrating substantial and continued growth in achievement.

In the initial pilot implementation of the growth model, we will track the growth trajectories for each individual student. A growth expectation will be calculated for each student who is already at proficiency or above that sets a goal of meeting expected academic growth. For students who are below proficiency, the growth expectation will be set to ensure that the student reaches proficiency within a four year span (see figures below, scales are illustrative only). In the figure on the left, a student whose performance (solid, black line) is already above the year 5 proficiency target (red, horizontal line) is expected to maintain her/his rate of growth (green, dash-dot line). In the figure on the right, a student whose performance (solid, black line) is not on track (green, dash-dot line) to meet the year 5 proficiency target (red, horizontal line) is expected to increase her/his rate of growth to meet proficiency by the target date (blue, dotted line). Note that student growth targets are not set with respect to any student characteristic (e.g., ethnicity, gender) but only as a function of the current achievement level and growth rate of the student. For each school, the percentage of students meeting growth targets each year will be tabulated and reported.





To evaluate growth at the school level, we will apply multilevel linear models (MLM) to student assessment data. In order to summarize performance of students in each school, we will estimate the school mean achievement growth (slope) for each school using hierarchical linear modeling. Average growth will also be calculated for each disaggregated student subgroup within the school. Each growth estimate will also be accompanied by a standard error based confidence interval produced by the MLM analysis. Through a standard setting procedure (described below), annual growth expectations for schools will be determined. Each year, school performance will be evaluated against growth standards. . For schools that meet the growth standard, schools will be designated as "meets AYP" if they have also met status-based AYP or the existing safe harbor provision. For schools that meet the growth standard but have not met status-based AYP or safe harbor, the school's current year designation will be maintained (see further description and table below). If growth targets are met by a school for two consecutive years, a school will be designated as "meets AYP" regardless of its former status.

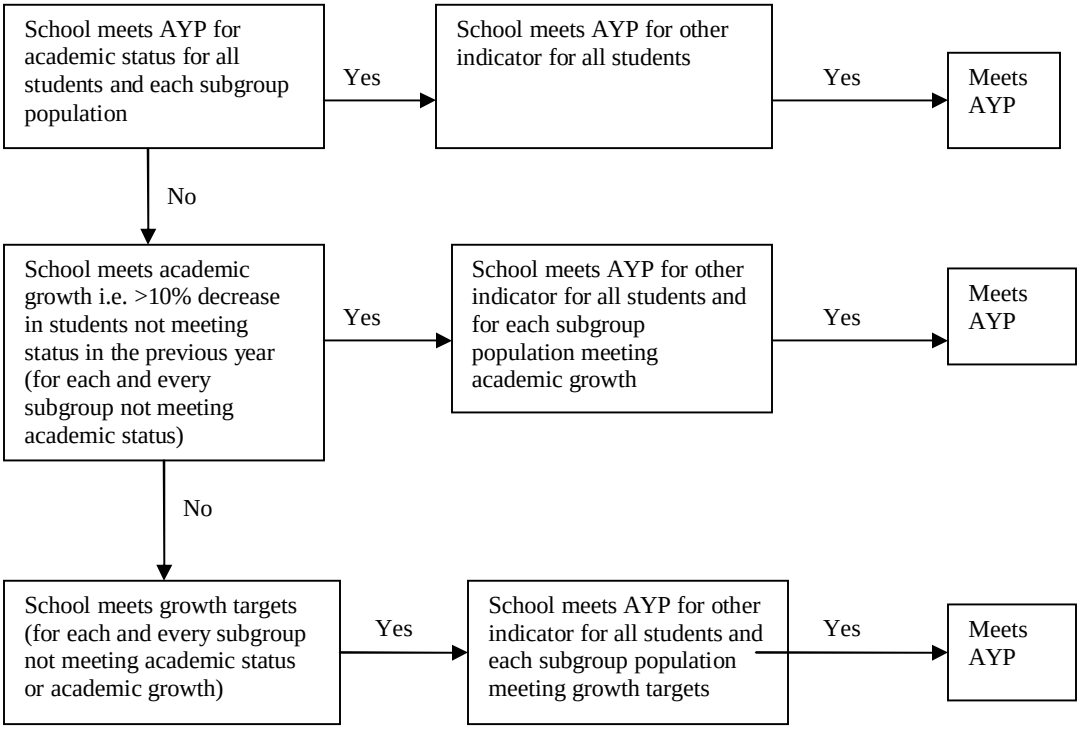
The Growth Model in Relation to Current AYP Formula and State Accountability

The No Child Left Behind Act requires the annual determination of whether schools, districts, and states have made adequate yearly progress (AYP) toward the goal of having all students meet rigorous state academic standards by the 2013-2014 school year. Each year, the performance of all students in the school and district, as well as subgroups of students, is measured against annual performance targets. The growth model will be used in conjunction with the existing, status-based AYP determinations and the existing safe harbor provision to ensure that schools are not incorrectly identified as being in improvement status when there is substantial growth in achievement occurring in the school. Our intent is to use measures of school growth as an additional mechanism beyond status-based models to demonstrate when clear progress is being made in the school. This process will add to the information available for evaluating school performance and provide more accurate identification of schools that are in need of improvement.

Under the current system, if all groups in a school meet the statewide academic achievement targets in English/Language Arts and Mathematics, and the school meets the targets for either attendance in elementary and middle schools or graduation rates for schools with grade 12, the school is designated as *meeting AYP*. Schools and districts that do not meet the academic status targets may qualify as meeting AYP under the safe harbor provision of NCLB. Using safe harbor, a school or district or any subgroup that reduces its percentage of students not meeting the standards by 10% or more, from the prior year to the current year, will be designated as *meeting AYP*, as long as the school, district, or subgroup also meets the target for the other academic indicator of graduation or attendance.

By instituting the new growth model another avenue will exist for schools to meet targets. *Schools and districts that do not meet the academic status targets and do not meet the requirements for safe harbor may qualify as meeting AYP if they have achieved academic growth targets.* Using academic growth, a school or district or any subgroup that meets the established growth target for students showing progress, from the prior year to the current year, will be designated as *meeting AYP*, as long as the school, district, or subgroup also meets the target for the other academic indicator of graduation or attendance. When this occurs, a school's current status will be maintained (see examples in table below). When growth targets are met for two years in a row, a school will be designated as meeting AYP and will be removed from school improvement status. This "two-year rule" for the application of growth model results is consistent with current Oregon status-based methods for schools to meet their targets.

How AYP Determinations Are Made



Consequences and Rate of Student Growth Consistent with Section 1116 of ESEA

The No Child Left Behind Act requires the annual determination of AYP for schools, districts, and states toward the goal of having all students meet rigorous state academic standards by the 2013-2014 school year. The performance of all students in the school and district, as well as subgroups of students, is measured against annual performance targets.

- If all groups in a school meet the statewide academic achievement targets in English/Language Arts and Mathematics and the school meets the targets for either attendance in elementary and middle schools or graduation rates for schools with grade 12, the school is designated as *meeting AYP*.
- Schools and districts that do not meet the academic status targets may qualify as meeting AYP under safe harbor. Using safe harbor, a school or district or any subgroup that reduces its percentage of students not meeting the standards by 10% or more from the prior year to the current year will be designated as *meeting AYP*, as long as the school, district, or subgroup also meets the target for the other academic indicator of graduation or attendance.
- *Schools and districts that do not meet the academic status targets and do not meet the requirements for safe harbor may qualify as meeting AYP if they have achieved academic growth targets.* Using academic growth, a school or district or any subgroup that meets the established growth target for students showing progress from the prior year to the current year will be designated as *meeting AYP*, as long as the school, district, or subgroup also meets the target for the other academic indicator of graduation or attendance.

Table 1 Question: Does growth keep a school from going into improvement status? Answer: Yes, it can.

	04-05	05-06		06-07		07-08		08-09
		Improvement status		Improvement status		Improvement status		Improvement status
AYP status	No		No		No		No	
AYP safe harbor	No	None	No	First year	No	Second year	No	Corrective action
AYP growth		None	Yes	None holding	Yes	None holding	Yes	None holding

Table 2 Question: Does growth move a school out of improvement status? Answer: Yes, it can.

	04-05	05-06	06-07		07-08		08-09		09-10
			Improvement status		Improvement status		Improvement status		Improvement status
AYP status	No	No		No		No		No	
AYP safe harbor	No	No	First year	No	Second Year	No	Corrective action	No	Plan for restructuring
AYP growth		No	First year	Yes	First year holding	Yes	Out	Yes	None

Table 3 Question: Is there a limit for how long growth can keep mitigating sanctions? Answer: No

	04-05	05-06	06-07		07-08		08-09		09-10
	Year 2		Improvement status	Year 3	Improvement status	Year 4	Improvement status	Year 5	Improvement status
AYP status	No	No		No		No		No	
AYP safe harbor	No	No	First year	No	Second year	No	Corrective action	No	Plan for restructuring
AYP growth		No	First year	Yes	First year holding	No	Second year	Yes	Second year holding

Grades Covered by the Growth Model

All grades (3-8, 10) that are assessed in the Oregon accountability system will be included in the growth model. For this pilot year, students with one, two, or three years of data will be included in the growth model. Students with only one year of data will contribute to the estimation of school initial level of achievement (intercept) in the growth model. Students with two or three years of data will contribute to estimation of the school growth slope. In future years, as additional data become available, they will be included in the model. Data from all available cohorts will be used each year to provide a more stable estimate of school growth. Because the Oregon TESA system allows for multiple testing occasions within each school year, we will attempt in the future to incorporate as many valid assessments as possible into estimates of school growth. Where possible in the future, we will also use the first available assessment score as a pretest covariate on estimation of the school growth slope. Use of these methods will increase the reliability and validity of the Oregon growth model and protect against potential factors like regression to the mean. In this first pilot year, data are available in the listed grades for the following cohorts of students:

Data Availability by Year and Grade

2002-03	2003-04	2004-05	2005-06
			3
		3	4
	3	4	5
	(4)	5	6
	5	6	7
5	(6)	7	8
	8	(HS - 9)	HS - 10
8	(HS - 9)	HS - 10	

( ) – Not all students at these grades will have scores

At the high school level we anticipate both short-term and long-term solutions to evaluating student growth. In this year, the 10th grade high school assessment will be used in combination with the student's 8th grade assessment score. In some cases additional assessments in 8th or 9th grade may be available and will also be used. This will provide a gain score comparison of growth in many cases or a three occasion growth model in other cases. In the future, this model may be replaced by a newer high school assessment that allows for more than one assessment occasion during the high school years.

Expected Trajectories of Growth

The model we propose will set performance expectations for each individual student. Expectations will be determined based on the student's current level of performance. For students who are below the proficiency standard, an individual growth expectation will be computed that requires the student to meet proficiency within four years. For students who are already at or above proficiency, an expectation will be set that keeps the student learning at a minimum average growth rate to be determined

through a standard setting procedure that takes into account growth rates that occur for students achieving at levels above proficiency and takes into account differences that may occur in rate of growth at different grades and in each content area (see example figures above).

How the Growth Model Will Work

All students are included in the growth model and impact results in two ways. At the student level all students have individual growth expectations and each year the percentage of students meeting growth expectation will be reported. At the school level, our goal is to obtain the most robust estimate of the school's effect on its students. Use of the average school slope accomplishes this and is the best indicator based on a number of statistical properties of estimation.[1] Unlike the use of a percentage meeting a target or a school median, use of the school mean growth rate or slope allows all students to contribute to the estimate of school growth.

Nonetheless, use of any summary measure including the mean does not necessarily fully represent the performance of all individuals within the group. To ensure that the proposed Oregon growth model does not mask or hide student underachievement in any way, two additional procedures have been designed. First, school average growth rates will be computed and reported for each disaggregated subgroup of students in the school. This procedure will ensure that all (i.e. educators, parents, and the public) are aware of differences in growth and will allow a more detailed and informed examination of achievement gaps in learning. Secondly, by tracking and reporting growth results for individual students, it will always be possible to determine the extent to which school summary results are applicable to the performance of individual students within each school. Although with these procedures we think it is unlikely that the performance of some students will be masked, we will explicitly monitor the new growth system for discrepancies over the next two years and, if necessary suggest changes in our procedures for 2008. ODE believes the mean to have considerable advantages and to be the best indicator of school performance for this particular application in growth models, but we are willing to consider other alternatives if necessary.

Credit for Growth

All students are included in the growth model and impact results in two ways. At the student level all students have individual growth expectations and each year the percentage of students meeting growth expectation will be reported in the School and District Performance Report. At the school level, the goal is to obtain the most robust estimate of the school's effect on its students. Use of the average

[1] The Theory of Maximum Likelihood Estimation supports the use of the mean as an estimator in situations of uncertainty about "true" values. The mean uses information about each and every score in a distribution (school), is unbiased, is consistent, and is sufficient as an estimator for the true value being estimated.

school slope accomplishes this best based on a number of statistical properties of estimation. [2] All students contribute to this estimate. The school will receive "credit" for every student that grows and will be accountable for every student who does not grow.

Counting Third Grade

AYP determinations for schools that have only assessment results from the first year of assessments (grade 3) will continue to be made using the calculation of academic status and safe harbor described in statute and in Oregon's approved accountability workbook. K-3 schools will not be included in the growth model.

Counting High School Assessments

All high school students will be included in the growth model. Students are required to take the high school assessment by 10th grade. At least one additional assessment score will be available for students from the 8th grade and for some students this year; additional scores will also be available. The high school assessment will be used in combination with the previous assessment scores to provide a gain score comparison of growth. Discussions are currently underway for improvements to the high school assessment system that may allow for more than one assessment occasion during the high school years in the future.

[2] Ibid.